

DRAFT
 NATURAL RESOURCES CONSERVATION SERVICE
 CONSERVATION PRACTICE STANDARD
ATMOSPHERIC RESOURCE QUALITY MANAGEMENT
 (AC.)

CODE 370

DEFINITION

A combination of treatments to manage resources that maintain or improve atmospheric quality.

PURPOSE

- ♦ Minimize or reduce emissions of:
 - Particulate matter (PM)
 - Smoke
 - Odors
 - Greenhouse gases
 - Ozone
 - Chemical drift
- ♦ Maintain or increase visibility

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to cropland, forest land, rangeland, roads, beef feedlots, dairies, poultry and swine operations other AFOs, equipment yards, staging areas, and other lands that contribute primary airborne particulates (dust, smoke, and chemicals), gaseous precursors of secondary airborne particulates (ammonia, nitrates, etc. from animals, animal waste or crop fertilization), odor, greenhouse gases, and other volatile organic compounds that can have a negative impact on air quality.

CRITERIA

General Criteria Applicable to All Purposes

The landowner is responsible for acquiring and following all necessary local, state, and federal permits.

The work shall be performed in compliance with all federal, state, and local laws, rules, and regulations affecting the control of PM, smoke, visibility/haze, ozone, odors, greenhouse gases, and chemical drift in the area of concern.

Specific Criteria Applicable to Reducing Particulate Matter Emissions

Roads. Minimize PM-10 (PM with equivalent aerodynamic diameter of 10 microns or less) generation from unpaved roads, staging areas, and equipment storage areas by treating with water, chemicals, soil stabilizers, mulch, or other cover.

Water applied to reduce particulate emissions shall be applied at a rate or in a manner that minimizes potential for tracking mud onto paved roads.

The amount of mud or animal waste tracked or spilled onto paved roads shall be reduced by cleaning equipment before leaving the field or cleaning tracked mud off of paved roads.

Soil stabilizers and other oil or chemical based treatments shall be applied following manufacturer recommendations and label instructions.

Road shoulders and right-of-way shall be vegetated if soil and climatic conditions permit. If it is not feasible to establish vegetation on these areas, they shall be treated with the same material used on the road.

Confined Animals. Manure management plans shall identify non-critical air periods when manure-harvesting practices can be conducted in confined areas without contributing to high PM-10 concentrations.

Management plans to decrease PM-10 and PM-2.5 (PM with an equivalent aerodynamic diameter of 2.5 microns or less) production from activities in concentrated animal areas shall include, as appropriate, minimizing depth of uncompacted manure on pen surfaces, sprinkler watering, surfacing, and manure harvest time tables. Feedlot pen manure harvest shall occur at least once a year. Whether a single annual manure harvest is planned or multiple intermediate manure harvests, a 1"-2" layer of well compacted manure shall be left above the mineral soil at the conclusion of the process.

The amount, method, and timing of animal waste storage and disposal shall be managed in conjunction with other practices to minimize ammonia volatilization losses from the waste.

Sprinkler systems used for water application to achieve particulate emission management, shall meet criteria in Conservation Practice Standard, Irrigation System, Sprinkler, (442).

Sprinkler watering to reduce PM-10 releases from feedlots shall be managed to minimize odor, and ammonia emissions associated with wet manure, as well as, prevent runoff.

Animal feed shall be mixed in an enclosed area, in an area protected from the wind, or during low wind periods to minimize dust from animal feed processing.

Feed and manure additives shall be utilized where data shows efficacy to minimize ammonia production and loss to the air (see conservation practice Feed Management, Code 592).

Cropland. Residue management (code 329A, 329B or 329C) shall be used to reduce the generation of PM from agricultural operations on cropland.

Cover crops shall be established on fields susceptible to PM-10 generation during vulnerable periods (see conservation practice standard Cover Crop, code 340).

Cover crops shall be planted between the rows in orchards, groves and vineyards to minimize PM-10 generation during harvest operations.

Mowing operations shall be done in a manner which minimizes generation of PM.

Specific Criteria Applicable to Reducing Smoke Emissions

When burning, follow all procedures specified in agency burn policy including identification of off-site impacts.

In air sheds that impact Class I regional haze areas, burn or smoke management plans shall be followed.

Burns initiated for management of rangeland or forestland shall meet criteria in Conservation Practice Standard 462, Prescribed Burning.

Specific Criteria Applicable to Reducing Odor Emissions

Waste utilization (code 633) shall be used to reduce the amount or impact of odor during solid and liquid manure spreading or application operations.

Windbreaks (practice code 380) installed to provide reduced odor emissions shall be sited to minimize movement of odor away from an odor-producing source to a nearby sensitive area. Tree varieties and placement for the windbreak shall be managed to maximize odor interception and dilution of air, and reduce odor leaving the source.

Specific Criteria Applicable to Reducing Greenhouses Gas Emissions

Management plans to increase carbon sequestration in organic matter and soil and offset CO₂ emissions to the atmosphere shall specify the methodology, frequency and intensity of tillage activities.

Plans to provide renewable energy sources and offset greenhouse gas emissions through biomass removal shall specify the amount and timing of the biomass removal. Sufficient biomass shall be left on the surface to maintain soil quality and to achieve the planned soil loss reduction objective.

Capture and utilization, or reduction of methane emissions from animal waste storage shall be accomplished using an appropriate anaerobic digester or other approved methane reduction technology.

Nitrogen fertilizers shall be applied to croplands and rangelands in a manner which minimizes the loss of nitrous oxide (N₂O) to the air (see

conservation practice standard Nutrient Management, code 590).

Specific Criteria Applicable to Reducing Ozone

Minimize the emissions of NO_x, volatile organic compounds (VOCs), and other ozone precursors from farm equipment, irrigation engines, poultry and livestock manure storage, treatment, and application, and agricultural burning.

Specific Criteria Applicable to Reducing Chemical or Liquid Manure Drift

Reduce volatile organic compounds from pesticide application by changing formulations and adapting methods of application.

Minimize chemical drift during pesticide applications.

Site-specific application criteria listed on chemical labels shall be followed to address environmental hazards. Guidelines in Pest Management (595) shall be followed to reduce drift.

Site-specific application criteria listed in the nutrient management plan (590), waste utilization plan (633), or irrigation system sprinkler (442) hardware or management criteria shall be followed to address environmental hazards.

CONSIDERATIONS

Particulate matter.

As this practice is used to address primary PM concerns, care must be taken that treatment component management (i.e. sprinklers for dust control) selected to reduce primary particulate emissions do not result in nuisance odors and significant emission increase in greenhouse gases and volatile organic compounds.

Where appropriate, conservation plans, which identify wind erosion controls, should evaluate those controls for their PM-10 reductions.

Manure harvesting and dust scraping on open lots and corrals should be restricted to time periods in which one or more of the following conditions is present so as to minimize adverse impact on air quality from suspended PM:

1. Wind direction is reasonably stable and oriented such that airborne PM generated by manure-harvesting practices is carried away from critical nearby receptors not associated with the animal feeding operation, including but not limited to public roadways, residences, businesses and publicly-owned buildings.
2. Weather conditions are conducive to atmospheric mixing, including moderate winds (>5 mph, and <25 mph), warming temperatures, and abundant solar radiation; OR
3. Manure moisture content is sufficient to reduce dust potential substantially (>25% water by mass); OR

Acceptable material for reducing particulate emissions from unpaved roads include water, hygroscopic (water-attracting) materials such as magnesium or calcium chloride, petroleum emulsions, polymer emulsions, bituminous materials and mulch. (Mulch is an awfully generic term. Some candidates for this class of materials might themselves constitute a cure worse than the disease as they break down under traffic.)

Moving towards a reduced tillage system (i.e. Residue Management, No-till/strip-till, Conservation Practice Code 329A) will reduce PM generation and enhance soil carbon sequestration.

Because residue management practices normally use fewer trips across the field, they will also reduce the amount of particulates, nitrogen oxides (NO_x) and volatile organic compounds (VOCs) from internal combustion engines.

The speed at which field operations are done influences PM generation. In general, slower speeds reduce particulate emissions.

Use tillage methods and/or equipment that have been proven to reduce PM generation.

Mowing operations should be done when moisture conditions are favorable for reducing generation of PM.

Where critical downwind receptors include well-traveled roadways exhibiting a predictable, cyclical traffic load, manure harvesting

practices should be conducted during low-traffic periods. Similar public-exposure considerations apply when critical downwind receptors are residences, schools, businesses, hospitals and other structures, facilities or land uses at which the frequency or timing of human exposure to low air quality can be reasonably predicted and mitigated.

Instead of burning tree-trimming wastes, they can be chipped/shredded and used for composting or as mulch on unpaved roads or other areas that produce particulate emissions.

Reduce or limit turning of equipment and vehicles on paved roads to reduce the amount of soil tracked onto roads.

Controlling speed and access on unpaved roads will reduce the generation of PM.

Using cleaner burning fuels, such as natural gas, will reduce the emission of ozone precursors {nitrogen oxides (NO_x) and volatile organic compound (VOCs)} from farm engines.

Irrigation Water Management practices which will maximize water use efficiency, or engine and pump operating efficiency will reduce emissions of nitrogen oxides, PM, and VOC from internal combustion engines or electric power generation.

Smoke. Use alternative disposal methods for other combustible materials such as bags, sacks and domestic waste that will be more environmentally beneficial.

Odor. Anaerobic digesters can be constructed for odor control and methane capture.

Consider feed management (592), and animal mortality facility (316) to reduce odor generation.

Greenhouse gases. Reduce nitrogen losses as N₂O through the use of fertilizer type, amount and application timing and method, as described in Conservation Practice Code 590, Nutrient Management.

PLANS AND SPECIFICATIONS

Plans for atmospheric resource quality management that are elements of a more comprehensive conservation plan shall recognize other requirements of the conservation plan and shall be compatible with them.

Plans and specifications for Atmospheric Resource Quality Management shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. For livestock operations this will include the type of manure harvesting system used and the planned schedule of manure utilization or disposal.

Plan narratives or job sheets will address identified atmospheric resource concerns to meet quality and condition criteria. Plans and specifications will be listed separately to address PM, smoke, odor, greenhouse gas management, ozone and chemical drift for each field or treatment unit according to the Criteria and Considerations described in this standard.

Specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

The location of all supporting practices used will be shown on the drawings or conservation plan map.

OPERATION AND MAINTENANCE

The conservation plan should include operation and maintenance items needed to continue treatment of atmospheric resource related concerns.

Records of Operation and Maintenance activities shall be recorded and kept in accordance with associated practices and Federal, state and local laws.